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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/620,729	07/16/2003	Shigeaki Imai	15162/06040	9030

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EXAMINER

YUAN, KATHLEEN S

ART UNIT	PAPER NUMBER
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2624

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/01/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/620,729	Applicant(s) IMAI ET AL.	
	Examiner Kathleen S. Yuan	Art Unit 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 7 and 8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
3. Where applicant acts as his or her own lexicographer to specifically define a term of a claim contrary to its ordinary meaning, the written description must clearly redefine the claim term and set forth the uncommon definition so as to put one reasonably skilled in the art on notice that the applicant intended to so redefine that claim term. *Process Control Corp. v. HydReclaim Corp.*, 190 F.3d 1350, 1357, 52 USPQ2d 1029, 1033 (Fed. Cir. 1999). The term “symmetrically” in claim 7 and “synchronously” in claim 8 is used by the claims to mean rotated horizontally and rotated vertically as shown by fig. 1, items 12, 22 and 13, 23 and as indicated by the specification, while the accepted meaning is “mirrored about an axis” and “at the same time or rate”. The term is indefinite because the specification does not clearly redefine the term.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 2, 3 and 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6424877 (Kondo et al) in view of U.S. Patent No. 6079862 (Kawashima et al).

Kondo et al discloses a measurement system for measuring an object based on images (fig. 2), the system comprising: a two-dimensional measurement portion for conducting two-dimensional measurement of the object based on the image of the object (fig. 2, item 66 and col. 4, lines 20-21), the image being obtained by an image acquisition device (col. 3, lines 56-58 and col. 4, line 21); a stereoscopic measurement portion for conducting stereoscopic measurement of the object based on the images of the object (col. 4, lines 19-20), the images being obtained by an image acquisition device (col. 3, lines 56-58 and col. 4, lines 19-20); and a switching portion, a controller, for switching between the two-dimensional measurement portion and the stereoscopic measurement portion to perform an operation since it controls the operation of items 64 and 66 (fig. 2, item 62).

Kondo et al does not disclose expressly that the image acquisition device is multiple cameras and a positional control portion for controlling positions of the cameras to change photographing directions of the cameras.

Kawashima et al discloses an image acquisition unit with multiple cameras (fig. 14, items 4a and 4b) that have a positional control portion for controlling positions of the

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cameras to change photographing directions, rotating tables 10a and 10b that make the CCD cameras track movement (col. 15, lines 41-42).

Kondo et al and Kawashima et al are combinable because they are from the same field of endeavor, i.e. imaging objects.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use plural cameras and have a positional control portion to change directions of the cameras.

The suggestion/motivation for doing so would have been to provide a more flexible system by providing multiple views from multiple places.

Therefore, it would have been obvious to combine the image measuring of Kondo et al with the plural cameras of Kawashima et al to obtain the invention as specified in claim 1.

6. Regarding claim 2, since Kondo only has the one image acquisition device, the light receive window 14, that serves as a camera (col. 3, lines 56-58), and it uses only that image acquisition to conduct two dimensional measurement (col. 4, lines 19-21), Kondo teaches that the two dimensional measurement portion conducts the measurement based on only one camera.

7. Regarding claim 3, Kawashima discloses that the cameras allow for photographing directions different from each other (fig. 16, Θ_{m1t} and Θ_{m2t}), and the cameras are controlled so as to photograph ranges differing from each other, to track object 6 of fig. 16, thus having the different direction Θ_{m1t} and Θ_{m2t} , and to face directions differing from each other, as seen in fig. 16. This is all done when the two

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dimensional measurement is conducted because these cameras are CCD cameras that obtain images in 2D (col. 15, line 25), in which 3D coordinates can later be calculated (fig. 14, item 14).

8. Regarding claim 6, the positional control portion controls the entire position and posture of the cameras, since items 10a and 10b are rotating tables (col. 15, line 27), allowing for any position or posture of the cameras.

9. Regarding claim 7, cameras are controlled so as to move symmetrically as defined by the applicant, in Kawashima et al (fig. 2, axis of rotation between 3a and 2 for camera 4).

10. Regarding claim 8, in Kawashima et al, positional control portion allows for control of the position and posture of each of the cameras since it allows for rotation about the two axes in fig. 2 of the axis between items 3a and 2, and the axis at 3b. The cameras are controlled so as to move synchronously as defined by the applicant, as seen by the axis of rotation in item 3b.

11. Claim 4 rejected under 35 U.S.C. 103(a) as being unpatentable over Kondo et al in view of Kawashima et al, and further in view of U.S. Patent No. 5638461 (Fridge).

Kondo et al (as modified by Kawashima et al) all of the claimed elements as set forth above and incorporated herein by reference. Kawashima et al further discloses that the cameras allow for photographing directions differing from each other, Θ_{m1t} and Θ_{m2t} of fig. 16.

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Kondo et al (as modified by Kawashima et al) does not disclose expressly positions of the cameras are so controlled that the cameras photograph an overlapping range when the stereoscopic measurement is conducted.

Fridge discloses having an overlapping range in the cameras for stereoscopic measurements (fig.4a and 4b).

Kondo et al (as modified by Kawashima et al) and Fridge are combinable because they are from stereo imaging.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have an overlapping area in the stereo images.

The suggestion/motivation for doing so would have been to provide an accurate way of connecting two dimensional images in order to achieve the 3D image.

Therefore, it would have been obvious to combine the system of Kondo et al (as modified by Kawashima et al) with the overlap of Fridge to obtain the invention as specified in claim 4.

12. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kondo et al in view of Kawashima et al, and further in view of Fridge and U.S. Patent No. 6584219 (Yamashita et al).

Kondo et al (as modified by Kawashima et al) discloses all of the claimed elements as set forth above, and incorporated herein by reference. Kawashima et al further discloses that the positional control portion controls the positions of the cameras so that the cameras photograph ranges differing from each other and face directions

differing from each other when the two-dimensional measurement portion conducts two-dimensional measurement, Θ_{m1t} and Θ_{m2t} of fig. 16.

Kondo et al (as modified by Kawashima et al) does not disclose expressly controlling the positions of the cameras so that the cameras photograph an overlapping range when the stereoscopic measurement portion conducts stereoscopic measurement, the overlapping range including the object, and the switching portion switches to operate the two-dimensional measurement portion in an initial condition, and switches to operate the stereoscopic measurement portion when the two-dimensional measurement portion detects a moving object.

Fridge discloses having an overlapping range in the cameras for stereoscopic measurements (fig.4a and 4b).

Kondo et al (as modified by Kawashima et al) and Fridge are combinable because they are from stereo imaging.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to have an overlapping area in the stereo images.

The suggestion/motivation for doing so would have been to provide an accurate way of connecting two dimensional images in order to achieve the 3D image.

Kondo et al (as modified by Kawashima et al and Fridge) does not disclose expressly the switching portion switches to operate the two-dimensional measurement portion in an initial condition, and switches to operate the stereoscopic measurement portion when the two-dimensional measurement portion detects a moving object.

Yamashita et al discloses obtaining a 2D image signal, thus operating the 2D measurement portion at an initial condition, and then converting the signal into a 3D image signal when there is a movement in the image, thus switching to operate the stereoscopic measurement when there is movement in the two-dimensional measurement (col. 19, lines 51-55)

Kondo et al (as modified by Kawashima et al and Fridge) and Kawashima et al are combinable because they are from the same field of endeavor, i.e. 3D imaging.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to switch to 3D measurement when movement is detected.

The suggestion/motivation for doing so would have been to allow for an accurate, current representation of the position of the object in the case that it moves.

Therefore, it would have been obvious to combine the system of Kondo et al (as modified by Kawashima et al) with the overlapping region of Fridge and the switching during movement of Yamashita et al to obtain the invention as specified in claim 5.

13. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kondo et al in view of Kawashima et al, and further in view of U.S. Patent No. 3267431 (Greenberg et al).

Regarding claim 9, Kondo et al (as modified by Kawashima et al) discloses all of the claimed elements as set forth above, and incorporated herein by reference.

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Kondo et al (as modified by Kawashima et al) does not disclose expressly an alarm output portion for raising an alarm based on an alarm signal output from the switching portion.

Greenberg et al discloses having an indicator to show a mode switch (col. 14, lines 1-5).

Kondo et al (as modified by Kawashima et al) and Greenberg are combinable because they are from the same field of endeavor, i.e. image processing systems.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to raise alarm in the switching portion.

The suggestion/motivation for doing so would have been to provide the user with indication of what the image processing system is doing, thus providing a more user-friendly system.

Therefore, it would have been obvious to combine the system of Kondo et al (as modified by Kawashima et al) with the indicator of Greenberg et al to obtain the invention as specified in claim 9.

14. Regarding claim 10, Greenberg et al discloses the alarm output portion raises the alarm, or turns on the indicator, when the switching portion switches (col. 14, lines 1-5). Kondo et al discloses that the switching portion, a controller, switches between the two-dimensional measurement portion and the stereoscopic measurement portion to perform an operation since it controls the operation of items 64 and 66 (fig. 2, item 62).

15. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kondo et al in view of Kawashima et al, and further in view of U.S. Patent Application Publication No. 20030081821 (Mertelmeier et al).

Kondo et al (as modified by Kawashima et al) discloses all of the claimed elements as set forth above, and incorporated herein by reference. Kondo et al discloses that 3D data is obtained from the measuring device (col. 4, lines 19-20), and that resolution can be changed (fig. 11, s214).

Kondo et al (as modified by Kawashima et al) does not disclose expressly reducing resolution of the images, and switches between generation of data with high resolution and generation data with low resolution appropriately to conduct stereoscopic measurement.

Mertelmeier et al discloses switching in alternation between a high and low resolution for stereoscopic imaging (pg. 1, pp 0008).

Kondo et al (as modified by Kawashima et al) and Mertelmeier et al are combinable because they are from the same field of endeavor, i.e. 3D imaging.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to switch between high and low resolution for 3D imaging.

The suggestion/motivation for doing so would have been to provide a more flexible system by having two different representations of the object of interest.

Therefore, it would have been obvious to combine the system of Kondo et al (as modified by Kawashima et al) with the resolution switch of Mertelmeier to obtain the invention as specified in claim 11.

16. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kondo et al in view of Kawashima et al, and further in view of U.S. Patent No. 6556706 (Geng).

Kondo et al (as modified by Kawashima et al) discloses all of the claimed elements as set forth above, and incorporated herein by reference.

Kondo et al (as modified by Kawashima et al) does not disclose expressly each of the cameras includes an image pickup device in which a color filter having any one of three primary colors is arranged for each pixel, and when image data obtained by the cameras are processed, image data of pixels corresponding to only a color filter with a particular color in the image pickup device of each of the cameras are used.

Geng discloses color filters on a CCD camera (col. 4, lines 31-34), the image pickup device having any one of three primary colors, red green and blue is arranged for each pixel, the entire image (col. 4, lines 37-39). When the image data is obtained, image data of pixels corresponding to only a color filter with a particular color, any one of the colors of only the color filter of red green and blue, are used (col. 6, lines 29-40).

Kondo et al (as modified by Kawashima et al) and Geng are combinable because they are from the same field of endeavor, i.e. stereo imaging.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use a color filter.

The suggestion/motivation for doing so would have been to provide a better 3D representation by avoiding variation in the RGB value of each pixel due to reflection characteristics of the object's surface.

Therefore, it would have been obvious to combine the system of Kondo et al (as modified by Kawashima et al) with the color filter of Geng to obtain the invention as specified in claim 12.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kathleen S. Yuan whose telephone number is (571)272-2902. The examiner can normally be reached on Monday to Thursdays, 9 AM to 5 PM.

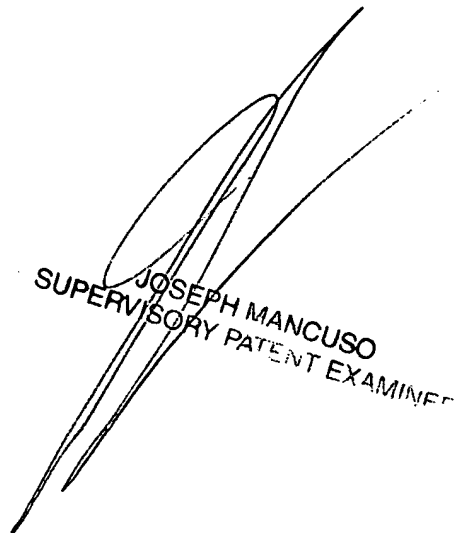
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Mancuso can be reached on (571)272-7695. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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KY

1/23/2007



JOSEPH MANCUSO
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